STATEMENT OF RICHARD S. GARNICK, PRESIDENT, NORTH AMERICAN SERVICES FOR KEANE, INC. TESTIMONY BEFORE THE HOUSE GOVERNMENT REFORM COMMITTEE

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Chairman Davis, Ranking Member Waxman, and Members of the Government Reform Committee: Good morning and thank you for holding this hearing on "Sharpening Our Edge – Staying Competitive in the 21st Century Marketplace."

I applaud you and the Committee for your leadership in an area of concern to every American business and family: The United States economic competitiveness and vitality in the years ahead. I am Richard Garnick, president of North American Services for Keane, Inc.

Keane is a leading business process and Information Technology (IT) services firm. We deliver Application and Business Process Services to help clients transform their business and IT operations to achieve demonstrable, measurable, and sustainable business benefit. As a trusted advisor and partner for its clients, we solve real business issues through the development and implementation of cost-effective, change-oriented and industry-specific solutions.

We believe that business and IT improvements are best realized by streamlining and optimizing business and IT processes, implementing rigorous management disciplines, and fostering a culture of accountability through meaningful performance metrics. We deliver our services through an integrated network of regional offices in the United States, Australia, Canada, India, and the United Kingdom, and are via SEI CMMI Level 5 evaluated Advanced Development Centers (ADCs) in Canada and India.

Summary

Sharpening America's competitive edge in the 21st Century simply means expanding the US Science, Technology, Engineering and Math (STEM) workforce. To remain globally competitive, America must double the number of STEM graduates over the next ten years, from approximately 430,000[1] to 860,000. In 2004, the National Academy of Sciences reported that 350,000 students from China graduated with Bachelor of Science degrees compared to 140,000 US students. In addition, 290,000 students graduated with three-year degrees from China compared to 85,000 US students with two-year degrees. Without disciplined, purposeful action, the nation's high tech future, and therefore its economic future, are at risk.

[1] Science and Engineering Indicators 2004, National Science Foundation

Workforce development is an imprecise undertaking at best. Although short-term labor surpluses in select areas can foster a desire to find the next vein of "hot jobs" in the economy, mapping today's education and training regimes to future job availability can be a confusing and frustrating process. Competition is a numbers game and doubling the number of STEM graduates is necessary to best position the United States for economic prosperity going forward.

Warning Signs are Evident

Competition for the future begins with competition in the classroom. If present day trends continue, America's ability to produce industry-defining innovations will dissipate and its role on the global economic stage could be reduced substantially. Warning signs are evident:

- Demographics are moving in the wrong direction. The college age population in many developed countries is declining, shrinking the pool of potential STEM graduates. Over 50 percent of STEM, degree holders are older than 40 years of age, making shortages in the next 20 years all but certain.[2]

- US self-sufficiency in math and science is at issue. American universities grant 50 percent of doctoral degrees in computer science to foreign-born students working in industry. The percentage of doctoral degrees in engineering is even higher.[3] 22 percent of science and engineering jobs in the US are now held by the foreign born.[4] While the nation may be able to meet short-term labor shortages by relying on this talent pool, such workers may ultimately decide to repatriate ─ taking with them their advanced degrees and American industry expertise.

- Tighter customs and immigration controls in response to homeland security concerns are dissuading foreign students from study in the US. A 2004 survey by the Council of Graduate Schools found the number of foreign students in US science and engineering programs is down, 24 percent in terms of the former and 20 percent in terms of the latter. Moreover, foreign students electing to study "hard" science disciplines may face a harder time in the visa screening process.[5]

- Federal government support for research and development has slipped substantially. In the aftermath of the Soviet Union's Sputnik launch, federal R&D funding of basic research swelled to 75 percent of all such spending. Seventy cents of every R&D dollar now comes from the private sector.[6] Federal R&D spending creates jobs for STEM graduates directly. This support also underwrites the development of valuable intellectual property that, through a process of

[2] National Science Board, The Science and Engineering Workforce, Realizing America's Potential, page 7
[3] Ibid, page 8
[4] Ibid, page 9
[5] Mary Beth Marklein, "Fewer Foreigners Enrolling in Grad School," *USA Today*, September 7, 2004
[6] John A. Douglass, R&D and the U.S. Economy: A Sputnik Reflection, University of California, Berkeley

technology transfer from the public domain to the private sector, forms the basis of still more capital investment, job creation, and wealth creation.

- While the number of undergraduate degrees awarded in the US is rising, the number of degrees awarded to science and engineering students is falling. Between 1985 and 2000, bachelor's degrees awarded in engineering, math, computer sciences, physical sciences and geological sciences fell 18.6 percent.[7] Roughly one-third of students declaring an engineering major switch prior to graduation.[8] The number of newly declared computer science undergraduates has dropped 33 percent and computer science masters' degree candidates have declined 25 percent since 2002.[9]

Turning Around, Stepping Up: Why Government Must Lead

Doubling the size of the STEM workforce is a challenge for STEM-focused and STEM-reliant industries. However, this is not a challenge for industries alone. Placing intelligent wagers on the nation's economic future must bring all players to the table, including government and, by extension, taxpayers. Fostering the type of workforce capable of accelerating invention and innovation across STEM competencies requires both a long-term view, and a broad view.

Businesses confronting the pressure to produce quarterly profits for shareholders are not ideally suited to the job of promoting STEM education and ultimately doubling STEM undergraduate enrollments. Failure is a potential outcome for all attempts to expand scientific knowledge, create inventions, or commercialize results. By its nature, businesses seek low risk, incremental product improvements and not transformational changes through high-risk research and development. Even corporations with a strong commitment to in-house research tend to downplay or spin off inventions not considered central to enterprise business strategies.

Innovation as a national economic strategy is a path marked by many hurdles. Only government can make the type of wide-scope investments in the STEM people, processes and applications required to assure the U.S. economic competitive leadership in the years ahead. Government as steward for the American people stands to benefit from the unpredictable, but economically powerful spillover effect of broad- gauged research and development investments. In addition, government benefits from STEM investments as knowledge transfers from the public to the private sector, generating business growth, job growth, and, as a result, tax revenue growth.

Comparative advantage in many high paying white-collar occupations is being erased rapidly. US supremacy in many high technology domains is eroding. If the surest path to

[7] Ibid, page 16
[8] Rising Above the Gathering Storm, National Academy of Science citing Myles Boylan, 2004, "Assessing Changes in Student Interest in Engineering Careers Over the Last Decade," National Academy of Engineering
[9] Computer Research Association, Taulbee Survey, 2004.

economic growth is an accelerated cycle of basic research, invention, innovation, and technology transfer, then government, industry and academia must work together to identify priorities and shoulder appropriate responsibilities.

Roles for Industry

The STEM workforce will grow only to the extent that young people see future career opportunities. US high tech companies must help newcomers understand the potential of such careers, the background requirements and experience needed to obtain this work and offer programs that assist students in gaining meaningful work experiences.

For example, Keane has initiated programs to ensure that the best and brightest college graduates are offered rewarding career opportunities in the US. We are investing in programs that recruit and train college graduates for positions throughout our North American Operations – from consulting engineers to technical sales consultants.

We are working with colleges at the earliest stages of career development to create internships and co-op programs that expose promising young engineering and business students to career opportunities at Keane. These programs target academic records of accomplishments that represent the intersection of business and technology and are designed to foster and reward the continued pursuit of innovation in these areas. We believe these efforts are important first investments in the future of Keane and the United States.

Corporations must play a role in public private partnerships at the national, regional, and local level. Quite often, this means funding fellowships and research, providing opportunities for student mentorship and internship programs and job shadowing, creating summer employment assignments for teachers, and participating in "adopt a school" programs. Industry engagement can also mean interaction and leadership on workforce investment boards, support of community colleges, and outreach to one-stop employment centers.

Many high tech corporations have adopted global delivery models, an approach that allows these enterprises to source expertise regardless of location and accelerate the pace of technology development. These factors may enter into a decision to seek skills and source jobs on a global rather than domestic basis. Clearly America cannot expect to be all things to all STEM markets, but industry must help the nation place its best possible bets now and in the future.

Roles for Government

It is evident that the government has an overarching responsibility to protect the national interest by investing in the nation's STEM workforce. With a policy commitment in place to double the number of STEM graduates over ten years, the federal government should likewise commit substantial funding to this purpose. We applaud the vision articulated by President Bush in his State of the Union address for an American

Competitiveness Initiative, and we look forward to working with the Bush administration and Congress on these efforts.

As members of Congress, I encourage you to plan a steady increase in Research & Development funding for both the National Science Foundation (NSF) and the National Institutes of Science and Technology for the 2007 Fiscal Year. NSF provides important stimulus to advancing the nation's STEM capabilities. The connection between high-risk basic research and economy lifting innovation is irrefutable, from the work leading to the discovery of lasers to fiber optics, and to the development of nylon and Teflon.

In addition to funding basic research, Government can play an important role in facilitating private sector research by making permanent the Research & Development tax credit. The existing R&D tax credit reduces the cost of capital, thereby mitigating the risks and allows companies to "push the envelope" in their technology development. A more aggressive approach to research in turn yields more bountiful returns to company investors, shareholders, and in the economy as a whole.

The Bush administration should continue to create incentives for the formation of highly useful public-private partnerships. Such partnerships help level set expectations, identify critical knowledge, and assure that STEM skill sets of US workers match the jobs of the 21st century.

Only three percent of 12th grade African American students and four percent of Hispanic American students are proficient in science ─ a situation that doubtless limits the numbers of minority students in STEM college programs and in the STEM workforce overall.[10] How will you as policymakers increase this percentage so all Americans are competitive tomorrow?

The action I have described today will play out over many years. There are, however, practical steps that can be taken in the near future to hone the nation's competitive advantage. One such step is to double the number of STEM graduates, which will include:

- Extending other training and assistance to workers in the services industries. In particular, the federal government should assist mid-career individuals who, through no fault of their own, have lost jobs in response to market pressures. Encouraging displaced professionals in and out of STEM-related industries to seek grants and other educational assistance in STEM fields will enhance the STEM ranks.

- Controlling health care costs so that employers can afford to keep jobs in this country. Companies and employees should be focused on getting the job done, not keeping a lid on health care expenses. Too often, the rising cost of health care enters into the company's plans for R&D investment, business expansion, and, ultimately, the hiring decision. Health care should be an affordable employment

[10] National Assessment of Educational Progress, 2000

benefit, not a major factor in a company's strategic staffing calculations. Health care costs are especially important for companies wherein competitiveness equates to intellectual capital and human asset availability.

- Nurturing the cross-pollination of technology and entrepreneurial education. A focus on entrepreneurial education for STEM students bridges the gap between theory and practice, draws more students to STEM programs, increases the likelihood that individuals starting in STEM disciplines will remain in STEM careers, and accelerates the economy's push for greater growth through innovation.[11]

Our elementary and secondary educational system must equip students to pursue STEM-related undergraduate and graduate degrees. Studies show that six out of ten high school students advance to Algebra II, and only one in ten high school students advances to trigonometry or calculus.[12] While retraining is always a possibility, students without inadequate foundation in math and science fail to qualify for opportunities as we look to higher-level education in STEM areas and STEM jobs down the road.

Conclusion

As a businessman who has been involved in the international high tech marketplace ─ most importantly, as a member of the Information Technology Association of America IT Services Board of Directors, I can tell you that the global race has not only started, but that countries including China and India are pulling ahead. They are making the investment in education. They are producing world-class research and development. They have the will to win, and so must we.

True leadership requires reasoned responses to present evidence. Despite its many comparative advantages ─ a democratic tradition, a system of laws, access to education for all, protections for intellectual property, a culture which nurtures and rewards entrepreneurship ─ the US has entered an era of unprecedented global competition. At the same time, American students are turning away from the math and science programs that will equip them to compete for the future.

The nation's best response to the new competitive reality posed by China, India, and other nations is to do what it does best ─ apply American ingenuity and innovation across the spectrum of human endeavor.

More than 2600 years ago, the master Kuan Chung said: "If you plan for a year, plant a seed. If for ten years, you plant a tree. If for 100 years, teach the people. When you sow a seed once, you will reap a single harvest. When you teach the people, you will reap a hundred harvests." It is important that Congress must now plant those seeds of education

[11] Ohland et al, "The Effect of an Entrepreneurship Program on GPA and Retention." Journal of Engineering Education, Vol. 93, No. 4, pp. 293-301.
[12] C.B. Cleweel & P.B. Campbell, "Taking Stock: Where We've been, Where We Are, Where We're Going," Journal of Woman and Minorities in Science and Engineering, Volume 8, pp. 255-284, 2002

and job training skills in our public school system. China and India have already begun, when will we?

I would like to thank the Committee for this opportunity. I look forward to working with you on legislative proposals to eliminate our disparities in education and workforce development.